Patent claims

1. A device for monitoring the flames of oil burners, having a sensor (10) and an amplifier circuit (11) for evaluating the signal (12) detected by the sensor (10), the sensitivity of the amplifier circuit (11) adapting itself automatically to the actual level of the signal (12) detected by the sensor (10), characterized in that a control signal (17) generated by the amplifier circuit (11) is mathematically combined with the signal (12) detected by the sensor (10) in a voltage divider device (13) of the amplifier circuit (11).

2. The device as claimed in claim 1, characterized in that the control signal (17) sets the amplitude of the signal (12) detected by the sensor (10) to the defined amplitude.

3. The device as claimed in claim 1 or 2, characterized in that an output variable (1?) of the voltage divider device (13) then successively passes through a filter device (14), a rectifier device (15) and an amplifier device (16), and in that the output signal of the amplifier device (16) is the control signal (17).

4. The device as claimed in one or more of claims 1 to 3, characterized in that the voltage divider device (13) is embodied as an adjustable resistor, and in that the filter device (14) preferably has two bandpass filters (19, 20) connected in series.

5. The device as claimed in one or more of claims 1 to 4, characterized in that the rectifier device (15) comprises a resistor (21) connected in series

with a diode 23, a capacitor 25 which is connected in parallel with each of these elements, and a resistor 24.

9. The device as claimed in one or more of claims 1 to 8, characterized in that the amplifier circuit 11 also has a comparator 30, the comparator 30 comparing the output signal 20 of the rectifier device 15 with a reference value and generating therefrom a flame signal 31 which contains information on the presence of a flame at the oil burner.

10. The device as claimed in one or more of claims 1 to 9, characterized in that a self-test signal 33 which is used for functional checking of the amplifier circuit 11 can be fed to the amplifier circuit 11.

11. The device as claimed in claim 10, characterized in that the self-test signal 33' can be fed to a second voltage divider device 34' which forms an input signal for the filter device 14' therefrom.

12. The device as claimed in claim 10 or 11, characterized in that the second voltage divider device 34 reduces the amplification of a first bandpass filter 19 as a function of a clock of the pulses of the self-test signal 33', the functional checking being permanently superimposed on the actual monitoring of the flames.

13. The device as claimed in claim 12, characterized in that the amplification of the first bandpass filter 19 is divided into three, halved, that is to say is not reduced to zero.

11. The device as claimed in one or more of claims 1 to 10, characterized in that the amplifier device (4) of the amplifier circuit (11) has a proportional-integral amplification characteristic.

12. The device as claimed in claim 11, characterized in that the amplification characteristic of the amplifier device (16) is changed to a predetined, sensitive state by a signal (30).

13. The device as claimed in claim 11 or 12, characterized in that the signal (30) for changing the integral amplification factor is activated as a function of setting switching-over operations of the oil burner in multi-setting burner operating mode in order to reliably detect the presence of a flame of the oil burner even during a setting switching-over operation.

14. The device as claimed in one or more of claims 1 to 13, characterized in that the amplifier circuit (11) is integrated into a microprocessor, in particular into a microprocessor-controlled controller.